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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/674,648

01/05/2001

Bodo Furchheim

7054-101XX

1304

62836

7590

08/03/2009

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EXAMINER

DIAZ, THOMAS C

ART UNIT

PAPER NUMBER

3656

MAIL DATE

DELIVERY MODE

08/03/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 09/674,648	<b>Applicant(s)</b> FURCHHEIM ET AL.	
	<b>Examiner</b> THOMAS DIAZ	<b>Art Unit</b> 3656	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 June 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-5 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 October 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 06/22/2009 has been entered.

### ***Status of Claims***

This office action is in response to the reply filed on 06/22/2009.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 19 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding the newly added claim 19, this claim appears to be new matter. There is no supporting disclosure that describes one of the said ends of the cam shaft being formed closed by the kneading process. The specification only describes closing the forming tool. Furthermore, Suzuki discloses one of the ends being closed prior to high internal pressure forming as described in the rejection above.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1 and 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki, U.S. Patent 4,660,269 in view of Jordan, U.S. Patent 4,382,390.**

Suzuki shows, in Figs. 1-12, a method for the manufacture of a camshaft from a tube 2, the camshaft having bearer rings 3 attached thereto, the method comprising the following steps; placing bearer rings, produced in a separate method and in correspondence with prospective locations of hollow cams on the cam shaft, in a high internal pressure forming tool 20, 21 together with the tube to be formed and subjected to the action of axial forces and a medium under high internal pressure, whereby the bearer rings are attached by expansion of the tube in a frictional and interlocking manner, each of the bearer rings having outer surface and an inner surface, the bearer

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rings having an even wall thickness (in a cross sectional view in the axial direction) and the necessary hardness, strength, and wear resistance; in a first method step prior to the high internal pressure forming, **regions (area near 7, 8)** which are clear of the regions in which the cams are seated are kneaded or upset such that said regions which are clear of the cam regions are increased in thickness and/or stretched to form **bearing faces, drive and/or control elements (fig.1, 7 and 8 form bearing faces since by definition a bearing is a member that supports and they also form control elements for controlling the position of the end caps 4 and 5);** characterized in that between the cam shaft ends in a step prior to internal high pressure forming bearing faces and the eventual region where the cams are to be seated, is produced by round kneading and by reducing the diameter in this part to the desired size; characterized in that bearing faces are produced between the cams by internal high pressure forming by expanding the tube; characterized in that the bearer rings are hardened in a known manner prior to being placed in the internal high pressure forming tool; wherein one of said ends is formed closed by the kneading process prior to high internal pressure forming (fig.4; end cap 4 closes one of the ends of the camshaft during the kneading process); but fails to show the bearer rings having equal radial thickness completely around the tube where the cams are formed and the end regions of the tube being upset by kneading.

As to the matter of the bearer rings and the cams formed on the tube, Jordan teaches, in Figs. 1 and 2, a cam shaft, characterized in that the cam shaft is produced from a tube by the internal high pressure forming method comprising regions 7 of the

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tube defining hollow cams in form and in position in a single piece, and on the formed cams a bearer rings 2 shaped to correspond to the cam periphery and made of a hard, wear-resistant material is secured frictionally and in an interlocking manner, each of the bearer rings having an outer surface and an inner surface, the radial thickness between the outer and inner surface being equal completely around the cam.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the shape of the bearer ring of Suzuki with the equal radial thickness as taught by Jordan in order to reduce weight and cost as described by Jordan, in col. 1, lines 27-30 and 53-56.

As to the matter of the end regions being upset by kneading, The Examiner takes Official Notice the fact that a kneading process in metal forming art is well known practice. To change shape or size of any metal element by kneading would have been an obvious process choice.

**Claims 1 and 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki, U.S. Patent 4,660,269 in view of Dawson, IPN WO 88/00643.**

Suzuki shows, in Figs. 1-12, a method for the manufacture of a camshaft from a tube 2, the camshaft having bearer rings 3 attached thereto, the method comprising the following steps; placing bearer rings in correspondence with prospective locations of hollow cams on the cam shaft, the bearer rings having an even wall thickness (in a cross sectional view in the axial direction) and the necessary hardness, strength, and wear resistance, in a separate method; placing the tube and the bearer rings in a high internal pressure forming tool 20; applying axial forces to the ends of the tube while

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applying a medium under a high internal pressure to the tube, whereby the tube is expanded in defined regions to form the hollow cams from the material of the tube and whereby the bearer rings are attached to the hollow tube cams in a frictional and interlocking manner by expansion of the tube; **upsetting regions (area near 7 and 8)** which are clear of the regions in which the cams are seated so as to be stretched to form **bearing faces, drive and/or control elements (fig.1, 7 and 8 form bearing faces since by definition a bearing is a member that supports and they also form control elements for controlling the position of the end caps 4 and 5);** characterized in that between the cam shaft ends in a step prior to internal high pressure forming bearing faces and the eventual region where the cams are to be seated, are produced by round kneading and by reducing the diameter in this part to the desired size; characterized in that bearing faces are produced by internal high pressure forming by expanding the tube; characterized in that the bearer rings are hardened in a known manner prior to being placed in the internal high pressure forming tool; wherein the cam shaft has two ends (fig.1, both ends), wherein one of said ends is formed closed by the kneading process prior to high internal pressure forming (fig.4; end cap 4 closes one of the ends of the camshaft during the kneading process), but fails to show the bearer rings having equal radial thickness completely around the tube where the cams are formed and the end regions of the tube being upset by kneading.

As to the matter of the bearer rings, Dawson shows, in Figs. 1-8, a cam shaft, characterized in that the cam shaft is produced from a tube 10 by the internal high pressure forming method comprising regions 24 of the tube defining hollow cams in

form and in position in a single piece, and on the formed cams a bearer rings 12 shaped to correspond to the cam periphery and made of a hard, wear-resistant material is secured frictionally and in an interlocking manner, each of the bearer rings having an outer surface and an inner surface, the radial thickness between the outer and inner surface being equal completely around the cam.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the shape of the bearer ring of Suzuki with the equal radial thickness as taught by Dawson in order to reduce weight and cost as described by Dawson, on page 13, lines 21-26.

As to the matter of the end regions being upset by kneading, The Examiner takes Official Notice the fact that a kneading process in metal forming art is well known practice. To change shape or size of any metal element by kneading would have been an obvious process choice.

### ***Response to Arguments***

In response to the applicant's argument that Suzuki fails to show "forming from the shaft itself bearing faces, drive and/or control elements". However, as currently amended the bearing faces, drive and/or control elements are not necessarily required to be formed from the shaft itself. Furthermore, as broadly interpreted by the examiner, Suzuki indeed discloses "bearing faces, drive and/or control elements". These terms are very broad and can be interpreted to be many different things. A bearing face is merely



any supporting face of the camshaft and a control element can be any element capable of controlling something.

Regarding the newly added claim 19, this claim appears to be new matter. There is no supporting disclosure that describes one of the said ends of the cam shaft being formed closed by the kneading process. The specification only describes closing the forming tool. Furthermore, Suzuki discloses one of the ends being closed prior to high internal pressure forming as described in the rejection above.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Please note Swars (5868042) which also shows different functional elements 7 and 10 formed from the shaft itself. Also please note Harie (5040294) on the kneading process.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to THOMAS DIAZ whose telephone number is (571)270-5461. The examiner can normally be reached on Monday-Friday 8:30am to 5:00pm..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Ridley can be reached on (571)272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Thomas Diaz/  
Examiner, Art Unit 3656

/Richard WL Ridley/  
Supervisory Patent Examiner, Art Unit 3656